PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Felipe O. Simoes, et al. Art Unit: 2838

Application No.: 10/807,791 Examiner:

Filed: 03/24/2004

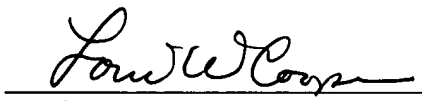
For: BATTERY CHARGING ASSEMBLY

Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

We now enclose a certified copy of British Application Serial No. 0308141.1 filed on April 8, 2003 by Research In Motion Limited, for "Battery Charger Adapter."

Respectfully submitted,



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Attorney for Applicant

I hereby certify that this correspondence is being deposited today with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
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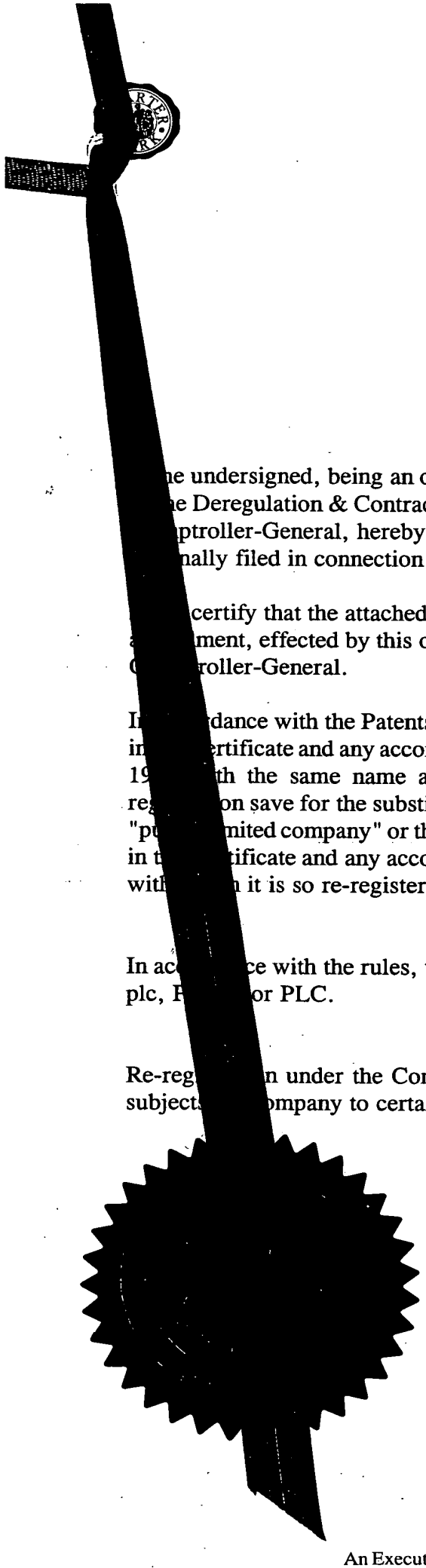

The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

INVESTOR IN PEOPLE

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

I certify that the attached copy of the request for grant of a Patent (Form 1/77) bears an amendment, effected by this office, following a request by the applicant and agreed to by the Comptroller-General.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1985 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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Dated 9 July 2004

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The Patent Office

09APR03 E798835-7 D02094
P01/7700 0.00-0308141.1

Request for grant of a patent

THE PATENT OFFICE
J
- 8 APR 2003
LONDON

= 8 APR 2003

1/77

The Patent Office

Cardiff Road
Newport
Gwent NP9 1RH

1. Your reference: JFW/43737GB1

2. Patent application number: 0308141.1

3. Full name, address and post code of the or each applicant:
Research In Motion Limited
295 Phillip Street
Waterloo N2L 3W8 ON
Canada

Patents ADP number

If the applicant is a corporate body, give the country/state of its incorporation: Canada - ONTARIO (See A/L d/d 15/5/03)
8605396001

4. Title of the invention: Battery Charger Adapter

5. Name of your agent: VENNER, SHIPLEY & CO
Kilburn + Strode

"Address for service" in the United Kingdom to which all correspondence should be sent:
20 LITTLE BRITAIN
LONDON
EC1A 7DH
20 Red Lion Street
LONDON
WC1R 4PJ
5177 1/4/04

Patents ADP: 1669004 ✓
125001
mail 15.4.04

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or each of these earlier applications and the or each application number

Country	Priority application number	Date of filing
United States of America	60/457,030	24 March 2003

7. If this application is divided or otherwise derived from an earlier UK application, give the number and filing date of the earlier application

Number of earlier application	Date of Filing

Patents Form 1/77

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? *(Answer 'YES' if:*
a) any applicant in 3. above is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body)

YES

9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form	
Description	6
Claim(s)	2
Abstract	1
Drawing(s)	9

10. If you are also filing any of the following state how many against each item.

Priority documents	
Translations of priority documents	
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	Three
Request for preliminary examination and search *(Patents Form 9/77)*	One
Request for substantive examination *(Patents Form 10/77)*	
Any other documents	

11. I/We request the grant of a patent on the basis of this application.

Signature

Date
8 April 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

Jan Walaski
020 7600 4212

BATTERY CHARGER ADAPTER

BACKGROUND OF THE INVENTION

[0001] This invention relates to battery chargers for mobile electronic devices such as pagers, cell phones, PDAs, calculators, organizers, notebook computers, wireless mobile communication devices and the like.

[0002] Most battery chargers for such devices have a fixed wall plug, integral with the actual charging unit, or a cable leading from the charging unit and terminating in a fixed wall plug. In the latter case, the cable may be permanently connected to the charging unit, or is sometimes supplied as a separate cable which is plugged into the charging unit.

[0003] In some recent battery chargers, however, such as the one illustrated in Figs. 5 and 6 (prior art), there are wall plug elements which are detachably and interchangeably installed on the charging unit. Such chargers allow a single charging unit to be used in a number of countries around the world, simply by removing one plug element and replacing it with another. For example, a standard two-blade North American plug can be removed and replaced with a European plug with its two cylindrical prongs. The circuitry within the charging unit senses the voltage and frequency differences from country to country, and adjusts for same automatically. In Figs. 5 and 6 (prior art), the plug element is secured to the body of the charging unit by a latch mechanism which is released by pressing a release button. Electrical contacts on the back of the plug element engage corresponding electrical contacts in the body of the charger.

[0004] Such chargers permit the same charger unit to be sold in a variety of countries, packaged with the plug element for the particular country. Alternatively, a kit can be provided, to combine the charger unit with a selection of plug elements.

[0005] Such chargers, while advantageous, are designed strictly for plugging directly into an electrical outlet, on a wall or power bar, for example. A charger without this limitation would be advantageous.

SUMMARY OF THE INVENTION

[0006] According to an aspect of the invention, a battery charger assembly for charging a battery in or for a mobile electronic device includes a charging unit and output means from the charging unit connectable to charge the battery. A power cord adapter is detachably securable to the charging unit, and has a body having electrical contacts positioned to contact corresponding electrical contacts on the charging unit to supply power to the charging unit, and an electrical cord extending from the power cord adapter and having a plug at a distal end thereof for connection to a power outlet.

[0007] Further features of the invention will be described or will become apparent in the course of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] The invention will now be described in greater detail, with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of an embodiment of the invention, from above;

Fig. 2 is a perspective view of the same embodiment, from below;

Fig. 3 is a perspective view similar to Fig. 2, but showing a variation in which the electrical cord may be disconnected from the adapter;

Fig. 4 is a perspective view corresponding to Fig. 3, showing the adapter and electrical cord disengaged from the body of the charging unit;

Fig. 5 (prior art) is a perspective view showing a plug element and the body of the charging unit, assembled;

Fig. 6 (prior art) is an exploded perspective view corresponding to Fig. 5, showing the plug element removed from the body;

Fig. 7 is a perspective view showing an embodiment of the invention on a desktop, plugged into a wall outlet via the electrical cord from the adapter;

Fig. 8 (prior art) is a perspective view similar to Fig. 7, contrasting the prior art with the embodiment of Fig. 7;

Fig. 9 is an exploded perspective view of another embodiment of the invention, looking towards the bottom of the charging unit;

Fig. 10 is a perspective view corresponding to Fig. 9, assembled;

Fig. 11 is an exploded perspective view of the Fig. 9 embodiment, looking towards the top of the charging unit;

Fig. 12 is another exploded perspective view corresponding to Fig. 11, but from another angle;

Fig. 13A is a side view of the charging unit of Fig. 9;

Fig. 13B is a bottom view of the charging unit of Fig. 9;

Fig. 14 is a cut-open view showing the Fig. 9 adapter secured to the charger body;

Fig. 15 is a view corresponding to Fig. 14, showing the adapter being removed from the charger body;

Fig. 16A is a side view of another alternative embodiment;

Fig. 16B is a bottom view of the Fig. 16A embodiment;

Fig. 17 is a cut-open view of the alternative embodiment showing the adapter secured to the charger body;

Fig. 18 is a view corresponding to Fig. 17, showing the locking means being disengaged;

Fig. 19 is a view corresponding to Fig. 17, showing the adapter being removed from the charger body;

Fig. 20 is an exploded perspective view of the Fig. 16A embodiment, looking towards the bottom of the charging unit;

Fig. 21 is an exploded perspective view of the Fig. 16A embodiment, looking towards the top of the charging unit;

Fig. 21A is another exploded perspective view corresponding to Fig. 21, but from another angle;

Fig. 22 is an exploded perspective view of yet another embodiment of the invention, using a ball-spring engagement means, looking towards the bottom of the charging unit;

Fig. 22A is a perspective view corresponding to Fig. 22, assembled;

Fig. 23 is an exploded perspective view of the Fig. 22 embodiment, looking towards the top of the charging unit;

Fig. 23A is another exploded perspective view corresponding to Fig. 23, but from another angle;

Fig. 24A is a side view of the charging unit of the Fig. 22 embodiment;

Fig. 24B is a bottom view of the charging unit of the Fig. 22 embodiment;

Fig. 25 is a cut-open view showing the Fig. 22 adapter secured to the charger body; and

Fig. 26 is a view corresponding to Fig. 25, showing the adapter being removed from the charger body.

DETAILED DESCRIPTION

[0009] Figs. 1-4 show one embodiment of the invention. The body **1** of the battery charging unit has the adapter **2** of the invention secured thereto, via a latch mechanism **3**. The adapter has an electrical cord **4** extending therefrom. In Figs. 1 and 2, the electrical cord is integral to the adapter, but in an alternative embodiment as shown in Figs. 3 and 4, it can be detached from the adapter. The adapter has electrical contacts which engage the contacts **7** of the charging unit body. The distal end of the electrical cord has a standard wall plug **9**. If desired, various electrical cords could be provided, with various types of distal end, according to the requirements of the particular country's electrical supply.

[0010] Preferably but not necessarily, the adapter is set at least partially into a recess in the body of the charger, so that the unit can lie flat or relatively so on a surface such as a desk, shelf, table, and the like.

[0011] Extending from the charging unit in conventional fashion is an output cable **31**, which may be permanently or removably connected to the charging unit, terminating in any appropriate connection means such as a USB plug **32**, for example, to connect to the item which needs its battery charged. The charging unit can in some cases also be used, or instead be used, to charge a battery pack **5** which removably snaps into the charger body.

[0012] This embodiment of the invention can be readily contrasted with Figs. 5 and 6 (prior art), which shows a plug element **6** detachably secured to the charger body **1** of the charger. As illustrated in Fig. 7, which can be contrasted with Fig. 8 (prior art), this configuration permits the battery charging unit to be placed away from the wall outlet, for example on a desktop. If desired, one or more plug elements may be provided with the charging unit, so that the end user has the option of locating the charger at an electrical outlet or remote from the outlet.

[0013] Fig. 7 shows the charger body **1** on a desktop **8**, plugged into a wall outlet **10** via the electrical cord **4** and plug **9**. Fig. 8 (prior art) shows a unit with plug elements installed as in the prior art, plugged into the wall outlet.

[0014] Figs. 9-15 are various perspective views of a preferred embodiment, from front and rear, assembled and exploded. The adapter is secured to the charger body by virtue of spring clips **12** which engage a post **14**. The adapter has a generally T-shaped cross-section, sliding into a correspondingly-shaped recess **15**.

[0015] Figs. 16A-21A show an alternative embodiment, similar to the preceding one, but including a tapered plunger **18** which is depressed to release the spring clips **12** from the post **14**.

[0016] Figs. 22-26 are various views showing another alternative embodiment, using a ball-spring engagement means. One or more balls **20** are biased by a spring **21** in conventional ball-detent fashion into detent recesses **22** in the adapter, providing enough retention force to prevent accidental disengagement, while allowing removal of the adapter when desired.

[0017] Preferably, the adapter is recessed into the charger body, as illustrated, so as to be flush or nearly flush with the underside thereof, to facilitate having the charger body sit flat on a desktop. However, it should be readily apparent that this is not essential.

[0018] It should also be readily apparent that other means for securing the adapter in the charger body could be employed, and the examples described above are just several of a number of alternatives.

[0019] It will be appreciated that the above description relates to the preferred embodiment by way of example only. Many variations on the invention will be obvious to those knowledgeable in the field, and such obvious variations are within the scope of the invention as described and claimed, whether or not expressly described.

CLAIMS:

1. A battery charger assembly for charging a battery in or for a mobile electronic device, said battery charger assembly comprising:

a charging unit;

output means from said charging unit connectable to charge said battery; and

a power cord adapter detachably securable to said charging unit, comprising a body having electrical contacts positioned to contact corresponding electrical contacts on said charging unit to supply power to said charging unit, and an electrical cord extending from said power cord adapter and having a plug at a distal end thereof for connection to a power outlet.

2. A battery charger assembly as in claim 1, wherein said power cord adapter is securable to said charging unit on a bottom side thereof and is at least partially recessed into said charging unit, so as to be approximately flush with said bottom side.

3. A battery charger assembly as in claim 1, wherein said electrical cord is integral with said adapter.

4. A battery charger assembly as in claim 1, wherein said electrical cord is separate from and functionally electrically connectable to said adapter.

5. A battery charger assembly as in claim 1, wherein said output means comprises an output charging cord connectable to a device to charge said battery in said device.

6. A battery charger assembly as in claim 1, wherein said output means comprises a USB output port.

7. A battery charger assembly as in claim 1, wherein said adapter is releasably secured to said charging unit by a latch mechanism.

8. A battery charger assembly as in claim 1, wherein said adapter is releasably secured to said charging unit by a ball-detent mechanism.

9. A battery charger assembly as in claim 1, wherein said adapter is releasably secured to said charging unit by spring clips on said adapter engaging a post extending from said charger.

ABSTRACT OF THE DISCLOSURE

A battery charger assembly for charging a battery in or for a mobile electronic device includes a charging unit and an output cable from the charging unit connectable to charge the battery. In addition to the output cable, or alternatively thereto, the charger may also be configured to charge a removable battery pack which snaps into the body of the charging unit for charging. A power cord adapter is detachably securable to the charging unit, and has a body having electrical contacts positioned to contact corresponding electrical contacts on the charging unit to supply power to the charging unit, and an electrical cord extending from the power cord adapter and having a plug at a distal end thereof for connection to a power outlet. This facilitates locating the charging unit at a location remote from the power outlet.

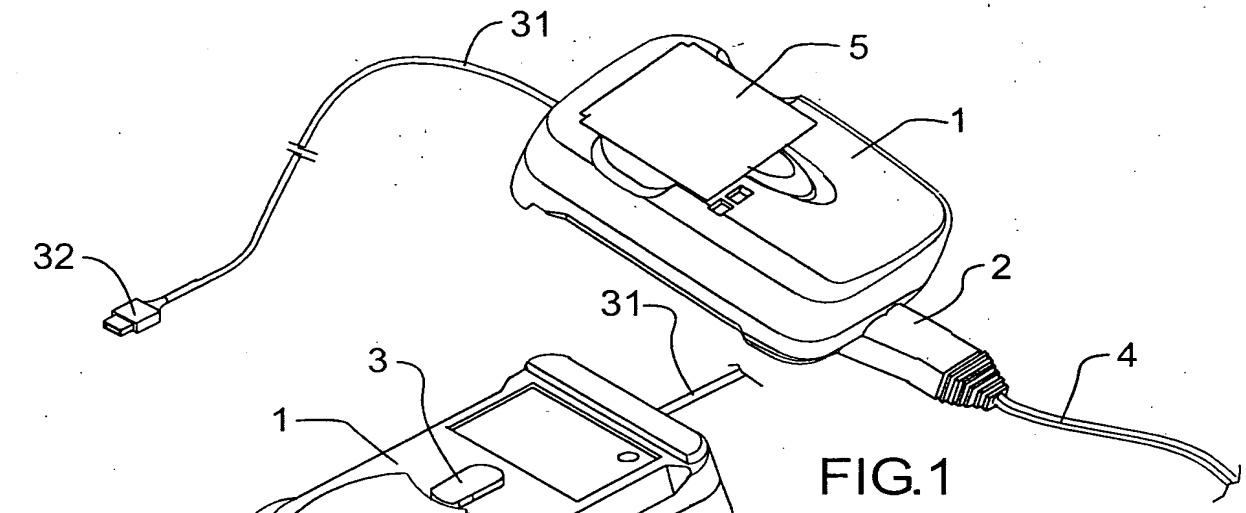

FIG.1

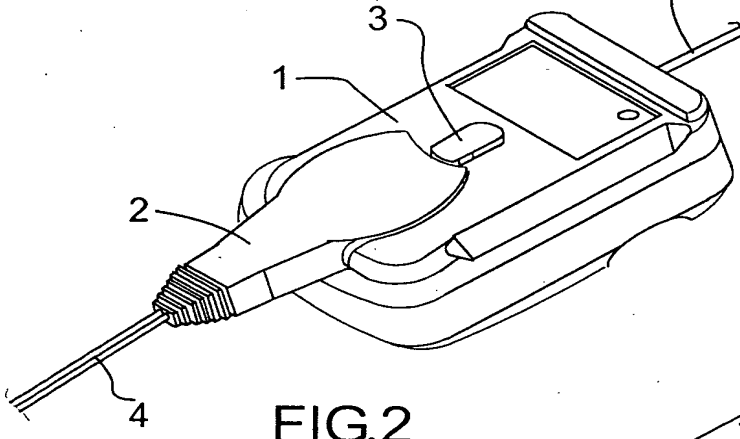

FIG.2

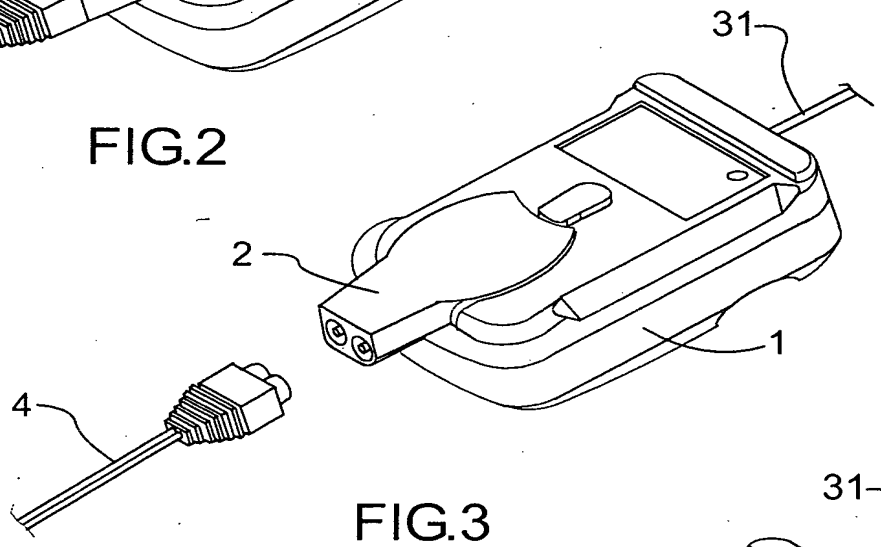

FIG.3

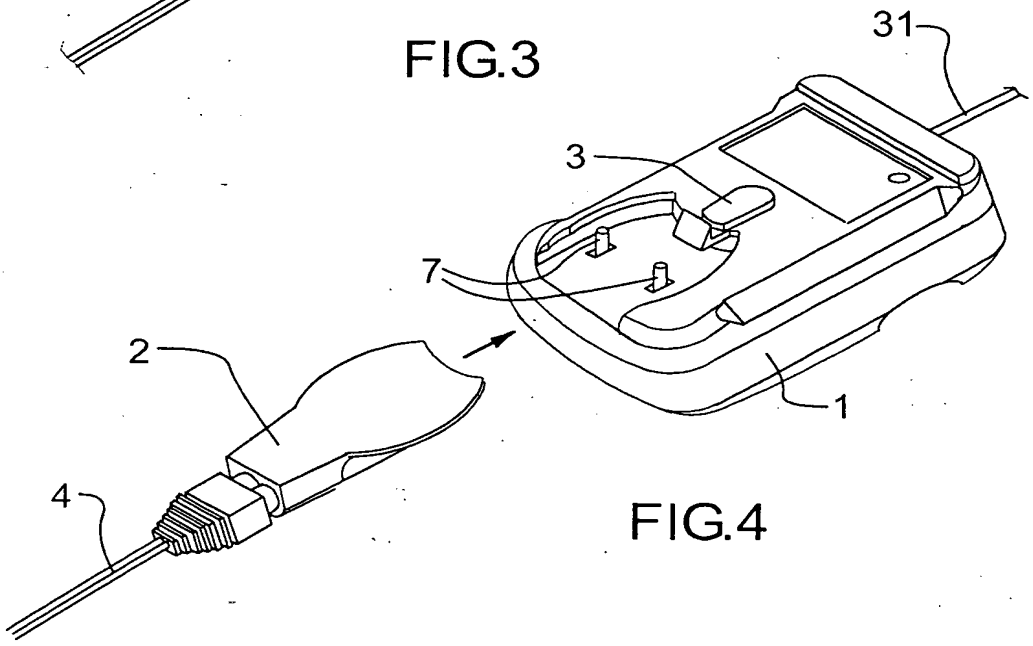

FIG.4

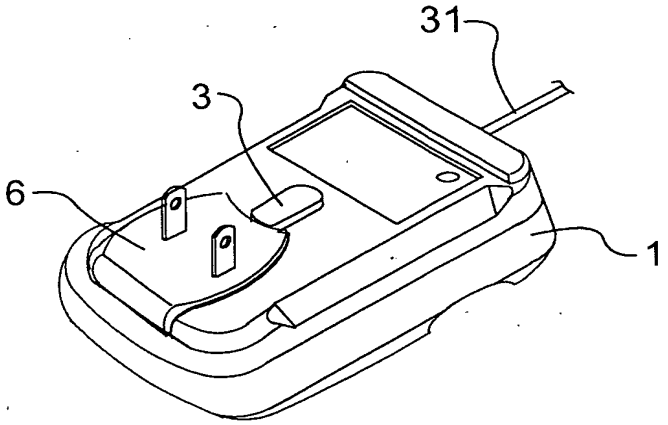

FIG.5 (PRIOR ART)

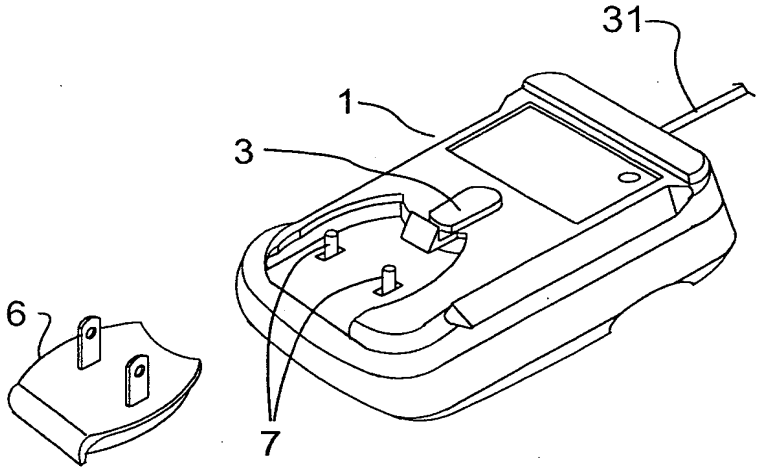

FIG.6 (PRIOR ART)

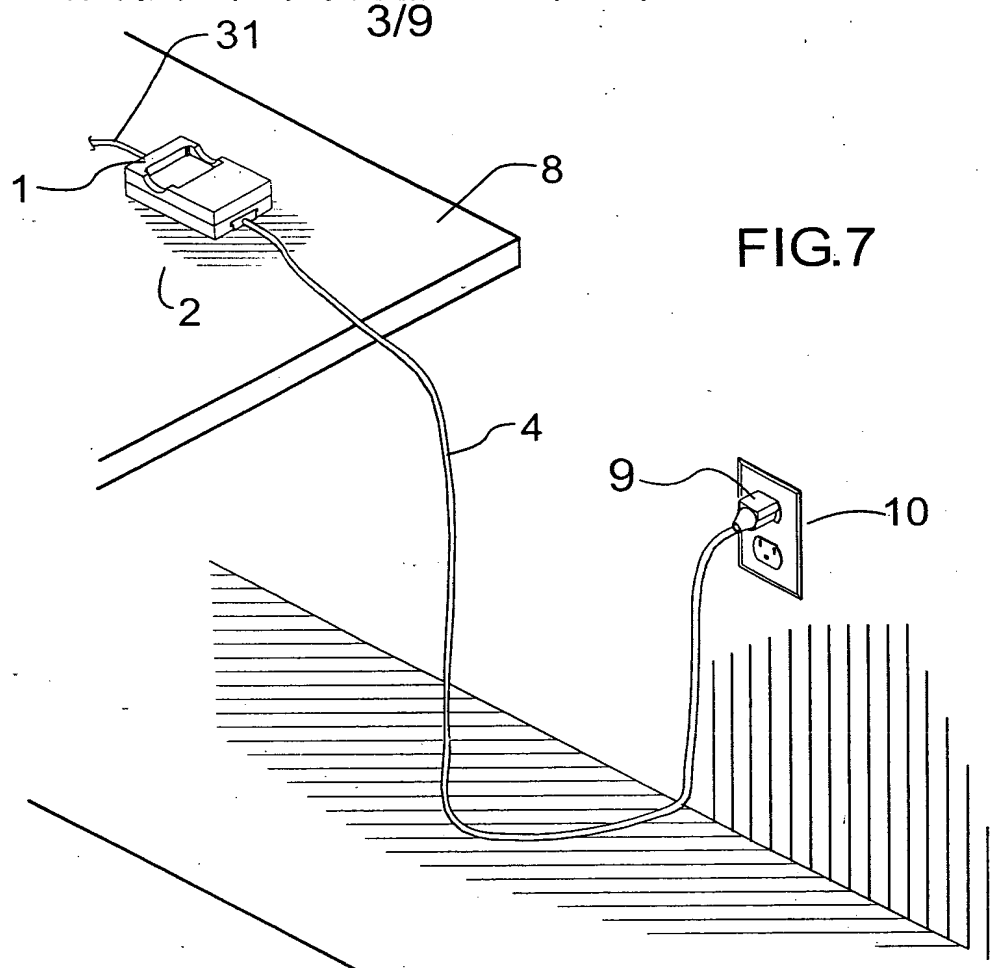

FIG.7

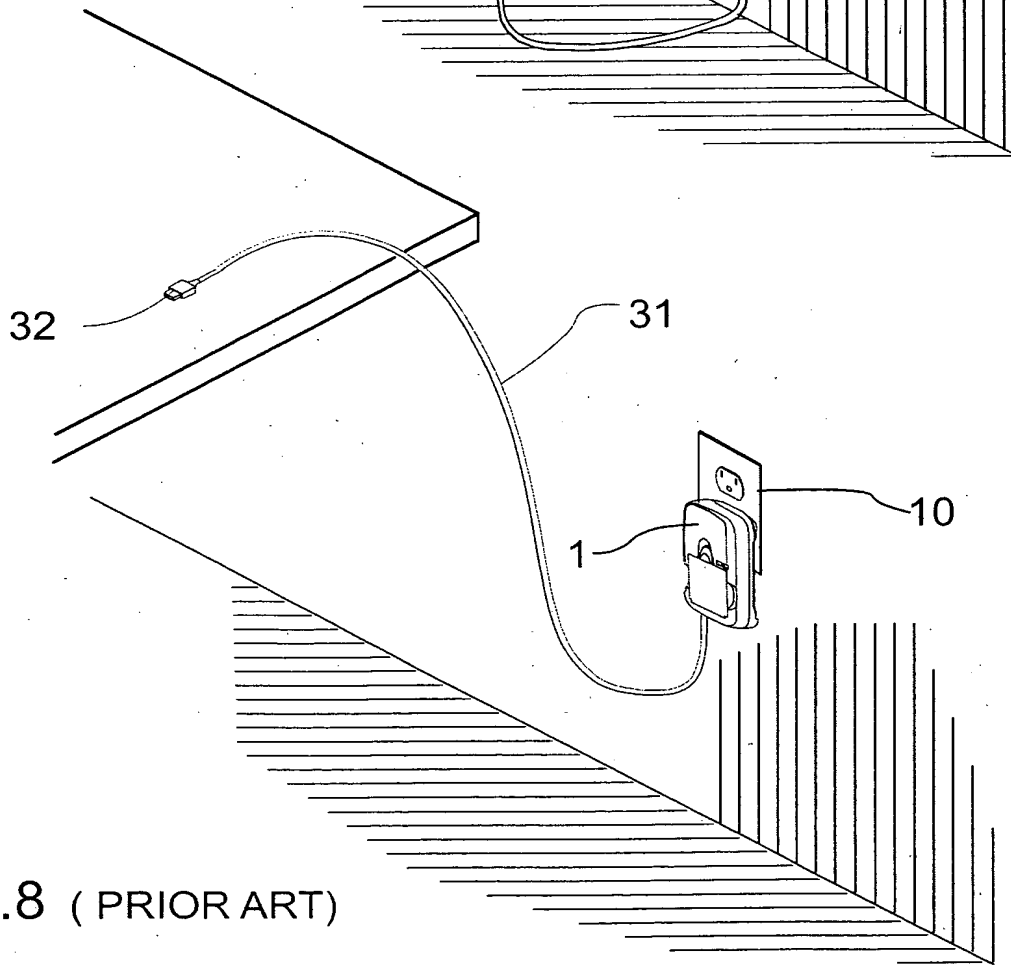

FIG.8 (PRIOR ART)

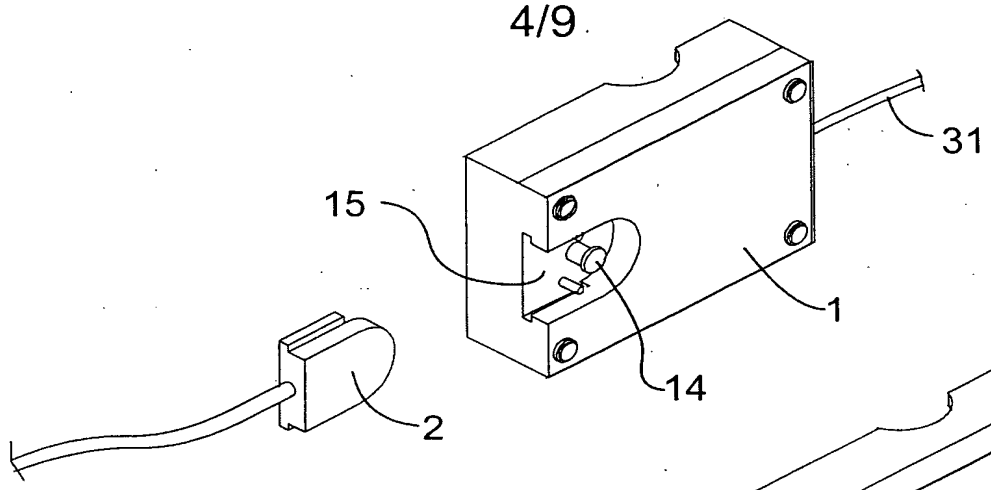

FIG.9

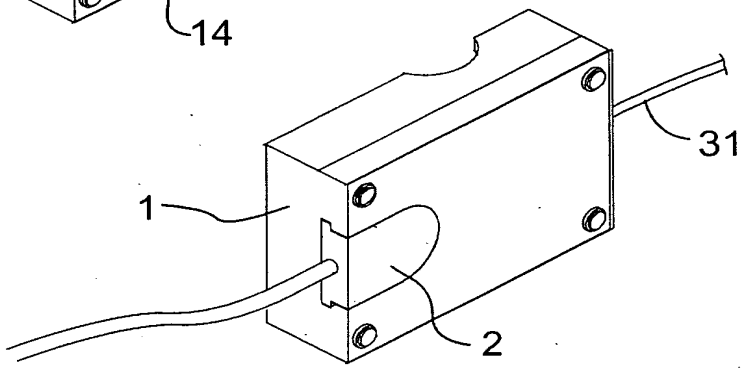

FIG.10

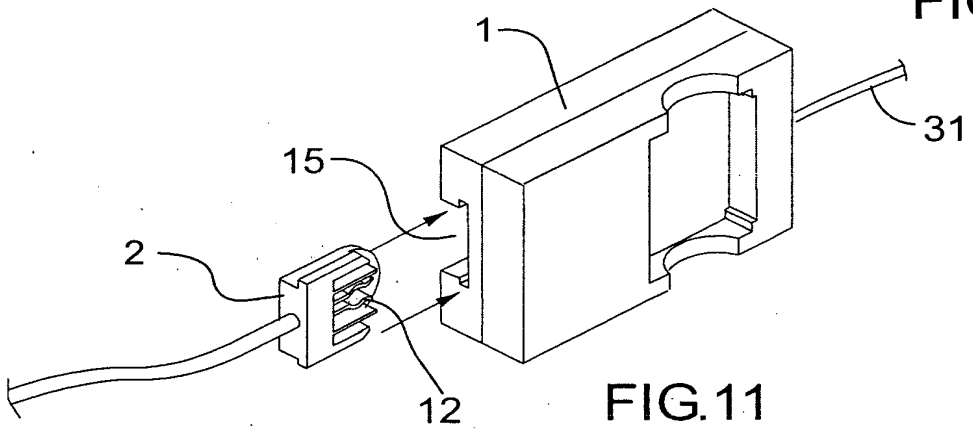

FIG.11

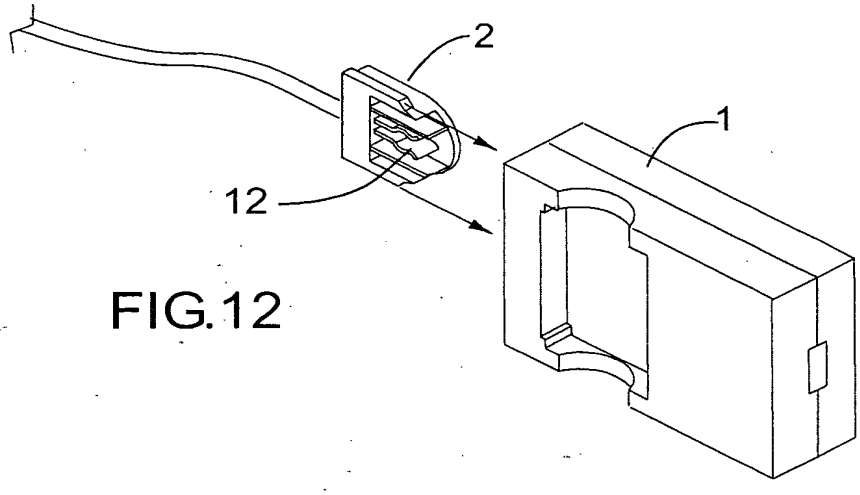

FIG.12

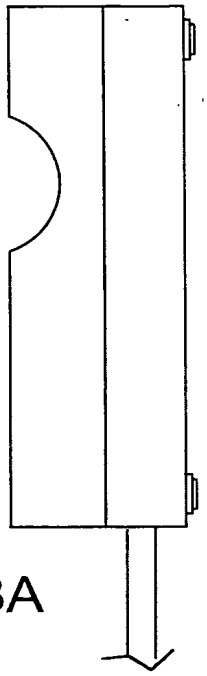

FIG.13A

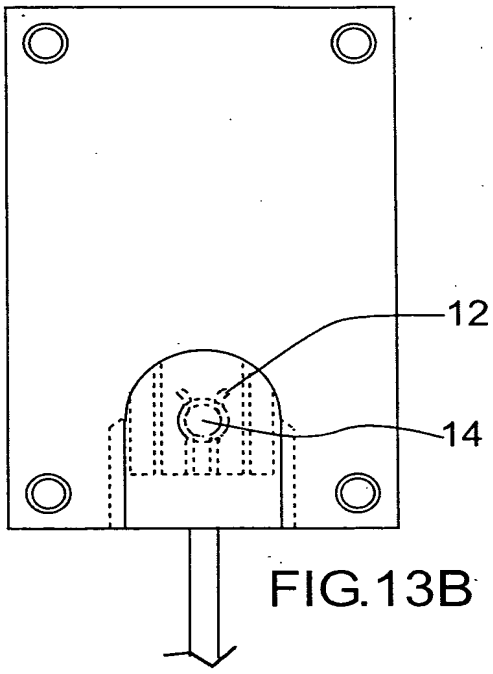

FIG.13B

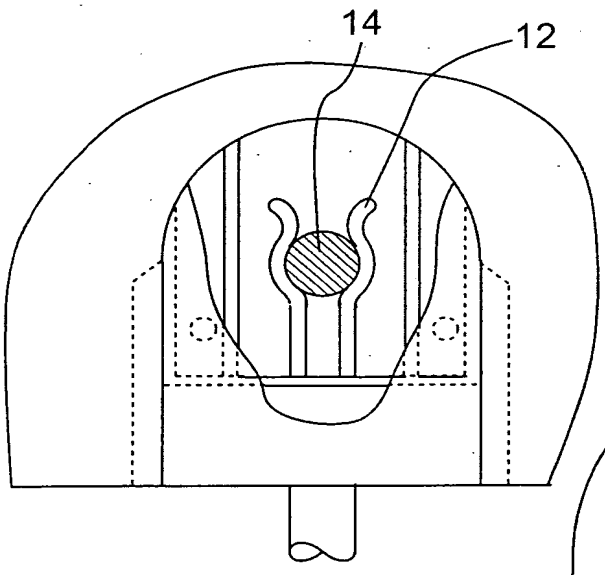

FIG.14

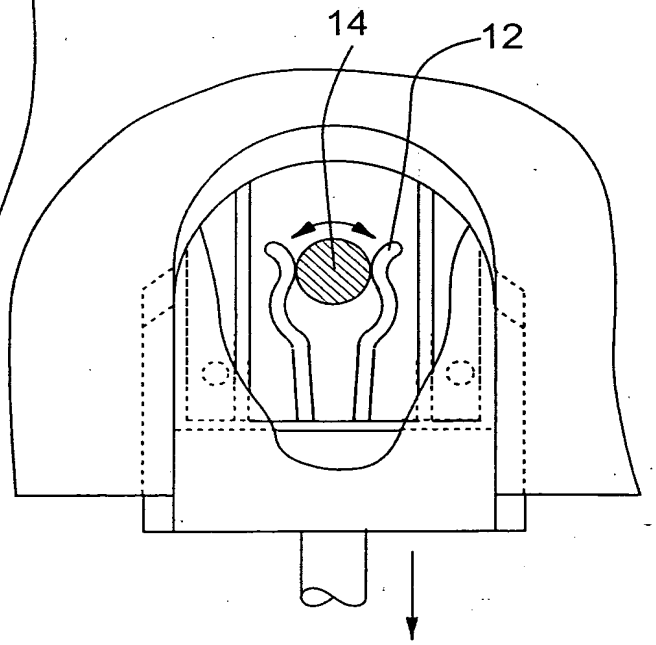

FIG.15

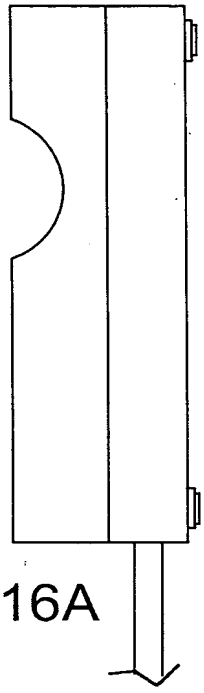

FIG.16A

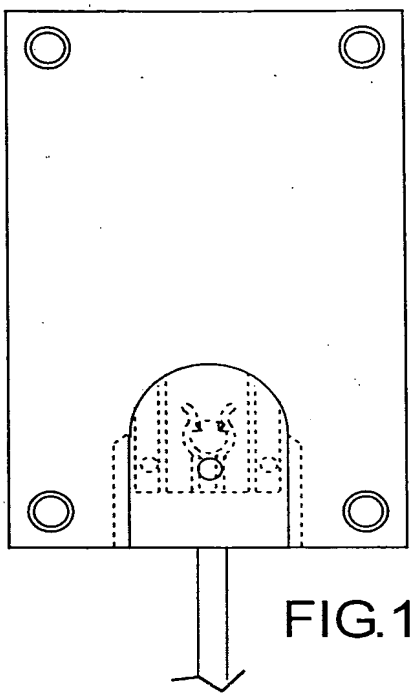

FIG.16B

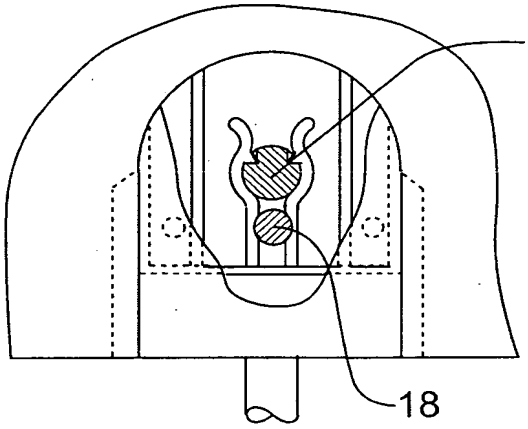

FIG.17

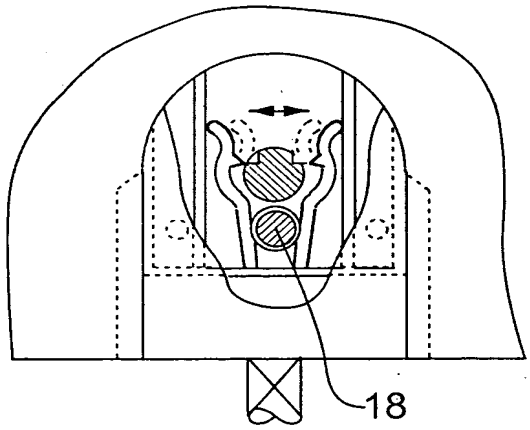

FIG.18

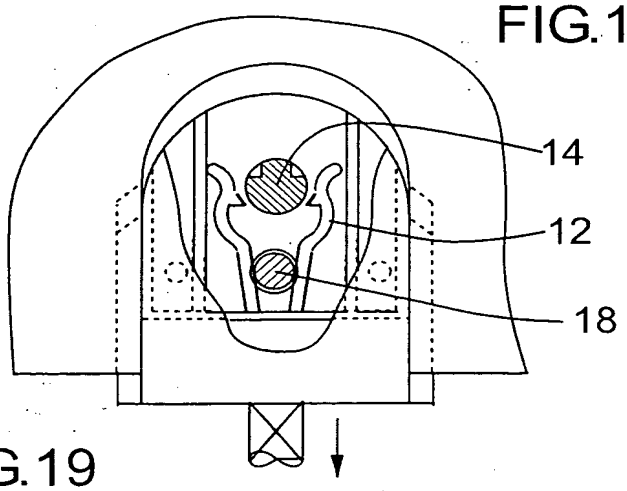

FIG.19

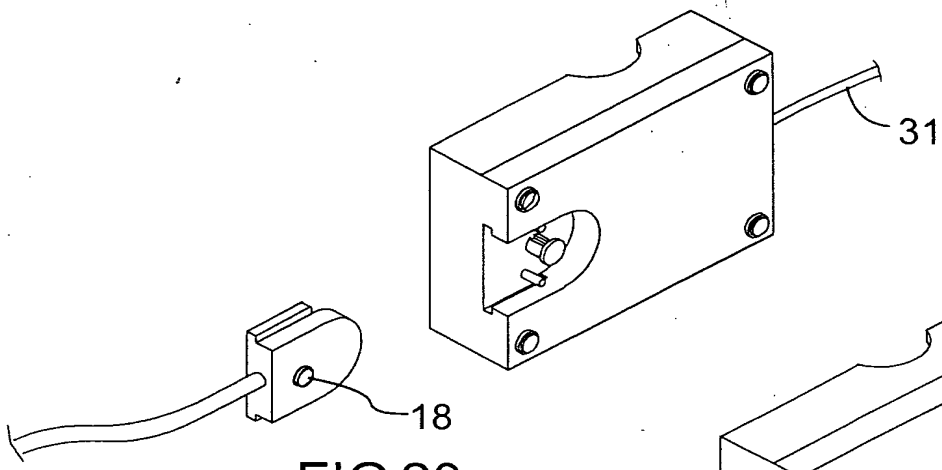

FIG.20

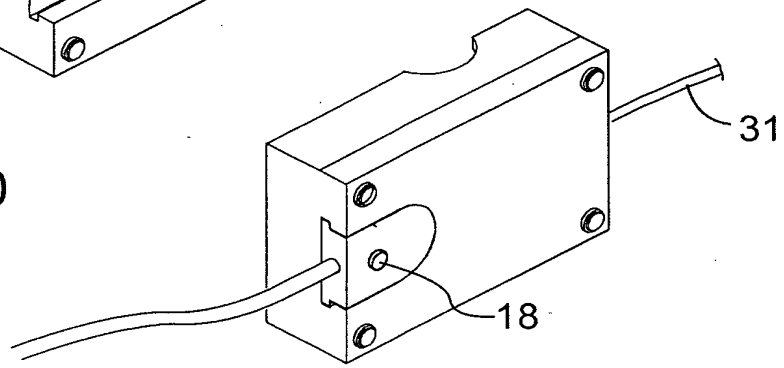

FIG.20A

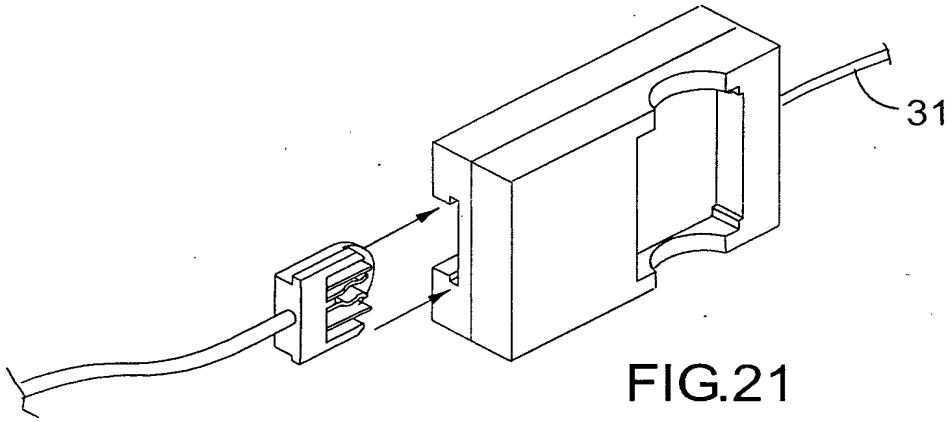

FIG.21

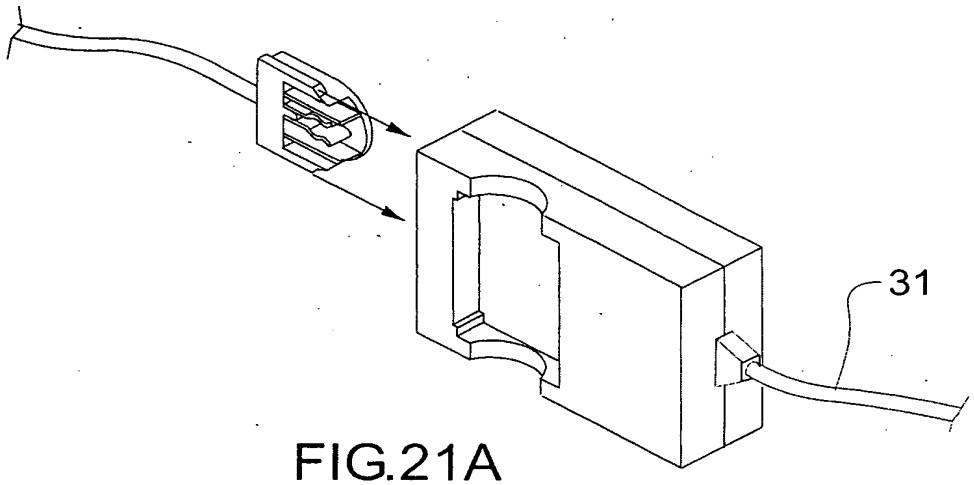

FIG.21A

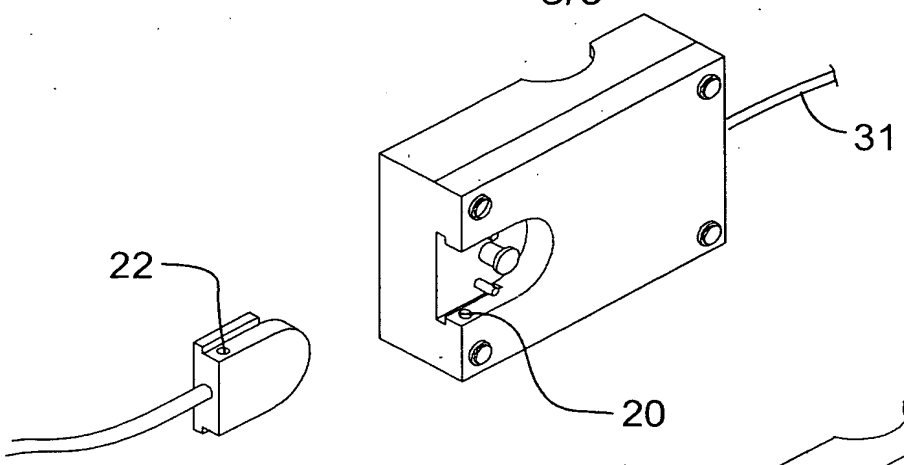

FIG.22

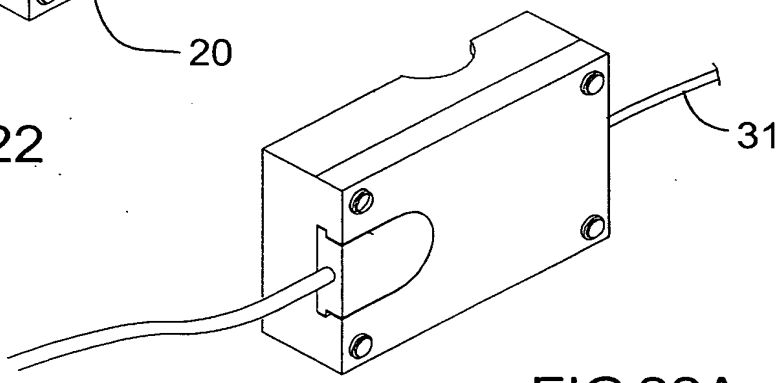

FIG.22A

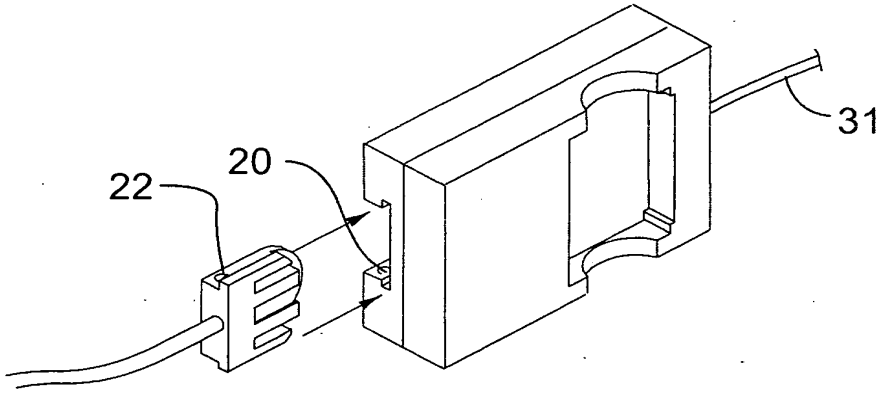

FIG.23

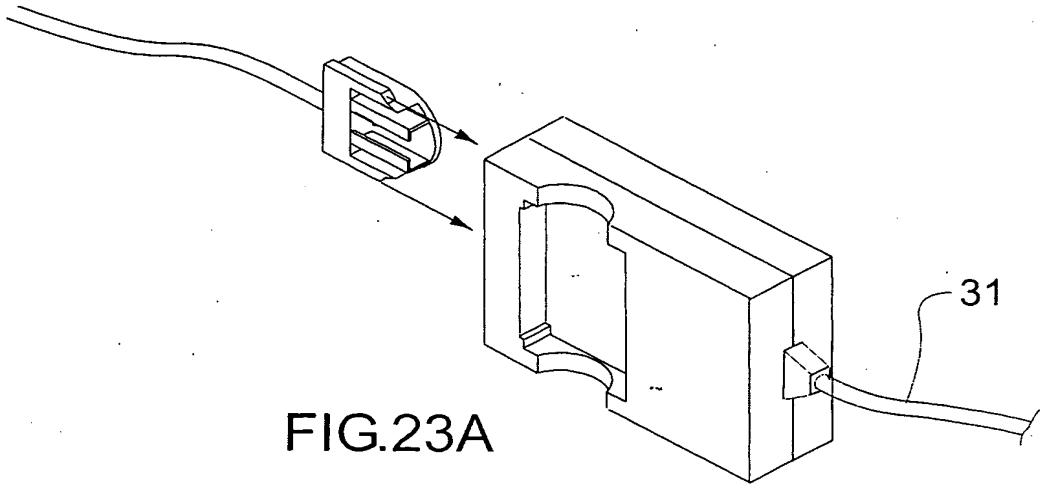

FIG.23A

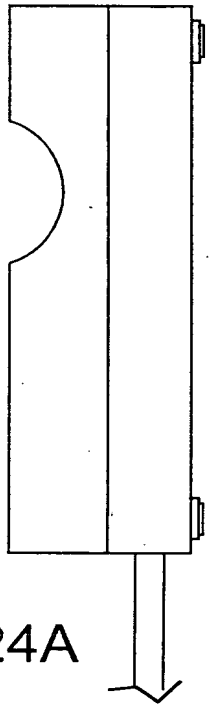

FIG.24A

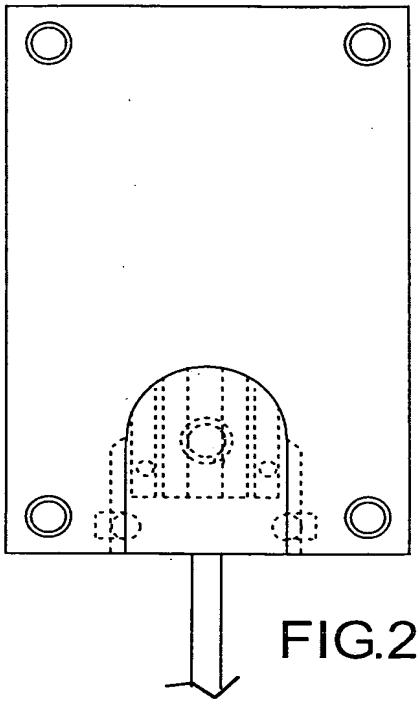

FIG.24B

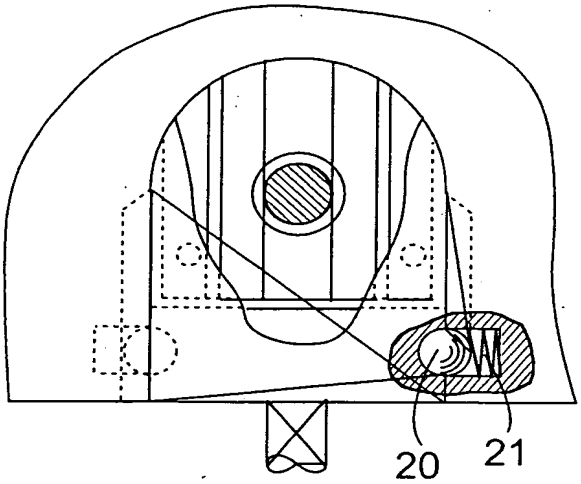

FIG.25

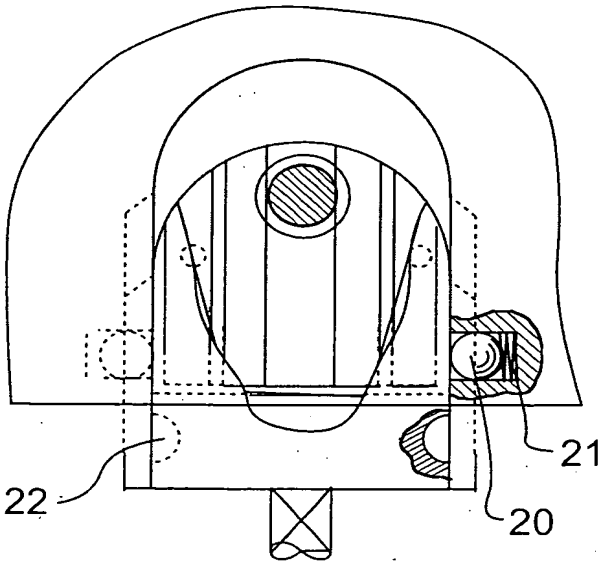

FIG.26